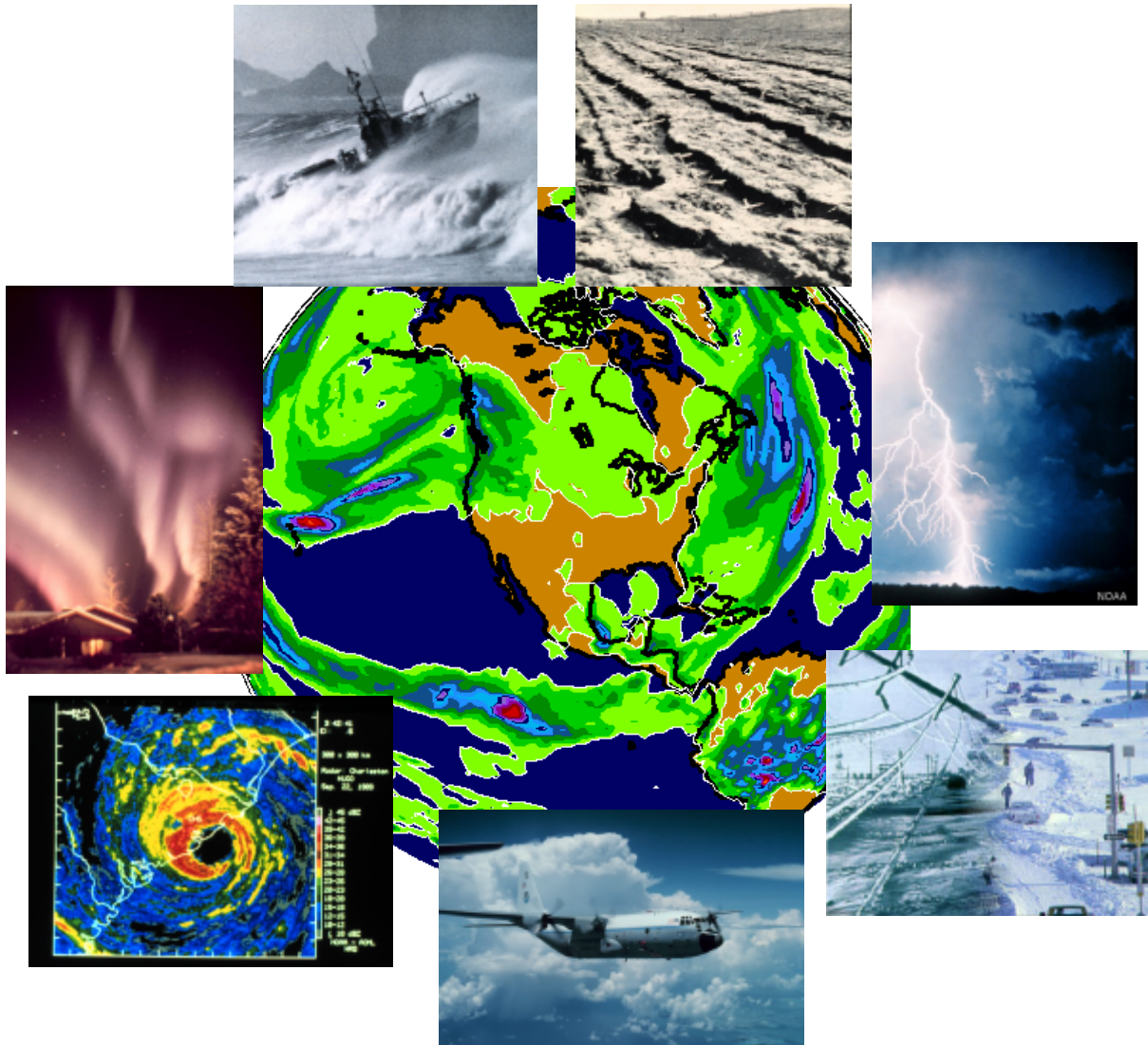




National Centers for Environmental Prediction

Year End Review - 2002



Where America's Climate and Weather Services Begin

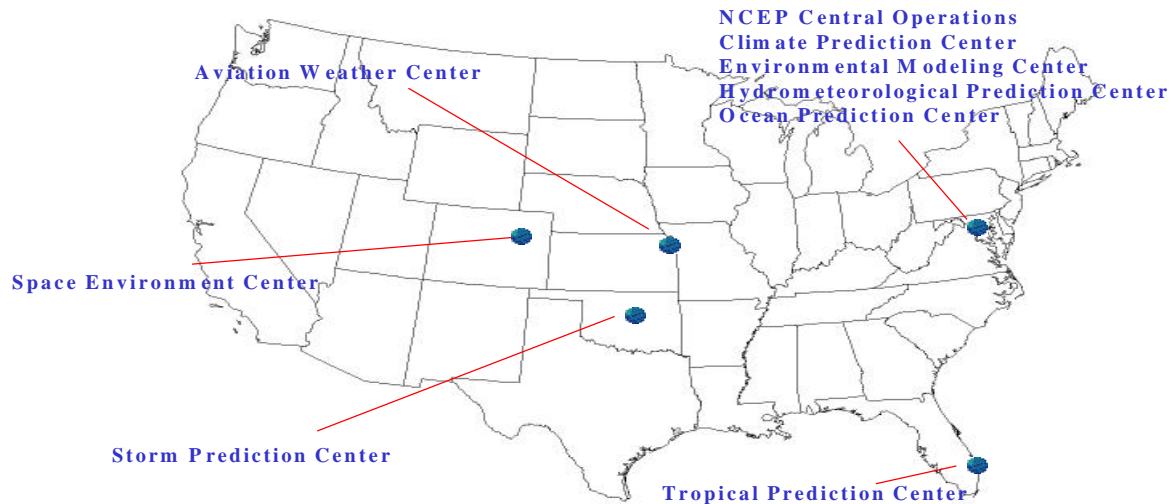
DIRECTOR'S MESSAGE

It is deeply gratifying to share with you the many accomplishments of the National Centers for Environmental Prediction over the course of 2002. This report offers a glimpse at our many successes throughout the year, highlighting exemplary performance achievements of NCEP employees, advances in our computer infrastructure and numerical weather and climate prediction models, new products, and strengthening collaborative efforts. Built upon a service-science legacy of the National Weather Service, these efforts illuminate the critical role that we play in providing national and global weather, water, climate and space weather guidance, forecasts, warnings and analyses to our partners and external user community. As Director, I look forward to the challenges that lie ahead as we continue to strive to attain our vision of “first choice”, “first alert”, and “preferred partner” for our diverse customer and partner base and to meet the goals outlined in the NOAA-NWS-NCEP Strategic Plans.

Dr. Louis W. Uccellini
Director, NCEP

WHO WE ARE

NCEP Center Locations



WHAT WE DO

Guidance to Support Weather Forecast Offices/ River Forecast Centers

- Severe Storm Outlooks
- Fire Weather Outlooks
- Weather Forecasts to Day 7
- Quantitative Precipitation Forecasts to 5 Days
- Marine Weather Discussions
- Model Discussions

National Products

- Surface Analyses
- Severe Weather Watches
- Hurricane Watches and Warnings
- Aviation Forecasts and Warnings
- Climate Forecasts
- Marine High Seas Forecasts/Warnings
- Space Weather Storm Forecasts/Warnings

Underlying Development and Operational Support

- Global/Regional Models
- Data Assimilation
- Ensemble Forecast Systems
- Computer and Network Operations

WHERE WE ARE GOING?

Our Vision

Striving to Be America's

- First Choice for Global and National Climate and Weather Analyses, Forecasts and Guidance
- First Alert for All Climate, Weather, and Space Weather Hazards
- Preferred Partner in Developing Numerical Model and New Weather, Water, Climate and Space Weather Products and Services

Our Future is Built Upon

- Climate-Weather-Water Linkages
- Seamless Suite of Products Through a Collaborative Approach
- Extension of Predictability of Weather and Climate
- Improving Forecasts of Extreme Events
- Common Model Infrastructure
- Addressing Uncertainty in Forecasts – Ensemble Modeling; Collaborative Forecasting

EXEMPLARY PERFORMANCE ACHIEVEMENTS

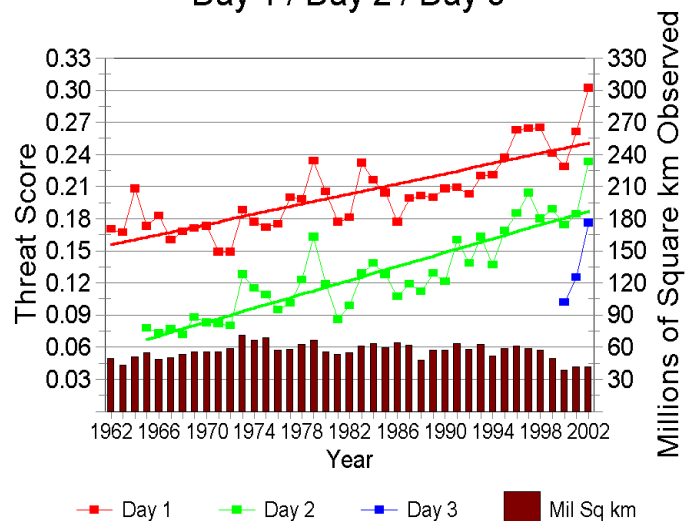
From providing timely and precise weather, water, and climate forecasts and guidance that protect lives and property to enhancing our nation's economy, NCEP continued to deliver exemplary services to the American people during 2002. NCEP was on the front lines providing critical information on flooding potential, developing El Nino conditions, hurricanes, tornadoes, an active fire weather season, and several winter storms crossing the country. Highlights include:

Hydrometeorological Prediction Center Obtained Record-Setting Precipitation Skill Scores for Day 1, 2, and 3.

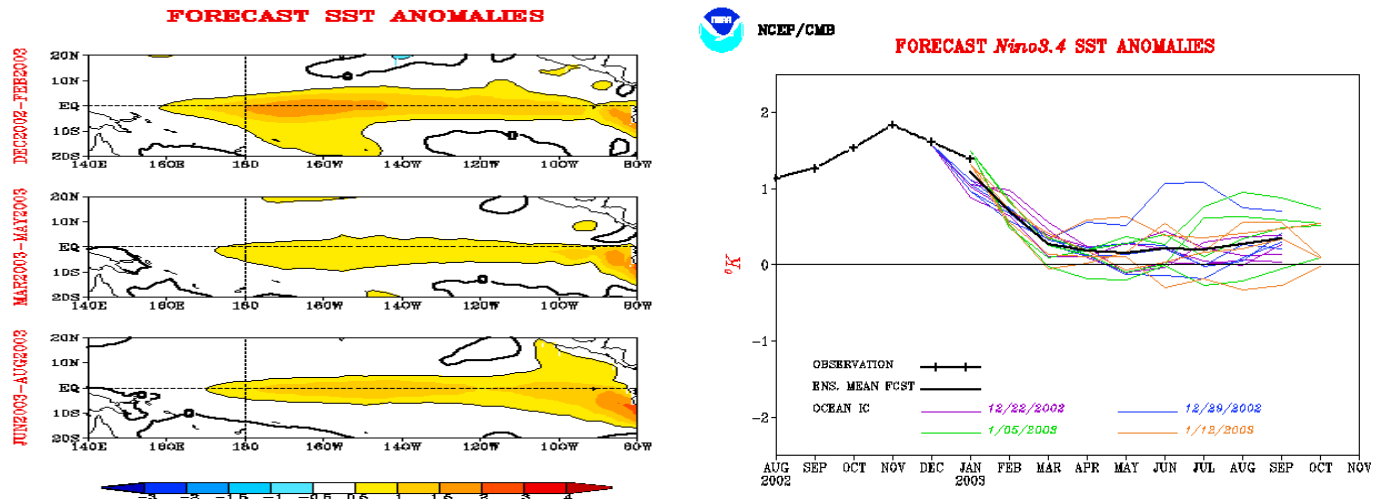
Providing accurate precipitation forecasts are vital to improving flash flood and river flood forecasts and warnings and for the water resources management community. Record precipitation skill scores were posted in January, March, May, September, November and December. In all, 34 new monthly or annual records were set in 2002 with some monthly records broken several times within the year. The Day 3 skill achieved in 2002 was as accurate as the Day 2 skill of three years ago. The QPF improvements reflect several factors: 1) model improvements, 2)

improvement in the workstation access to all relevant model output, and 3) expertise of the forecasters and ability to work with the model strengths and accounting for continued model weaknesses in QPF.

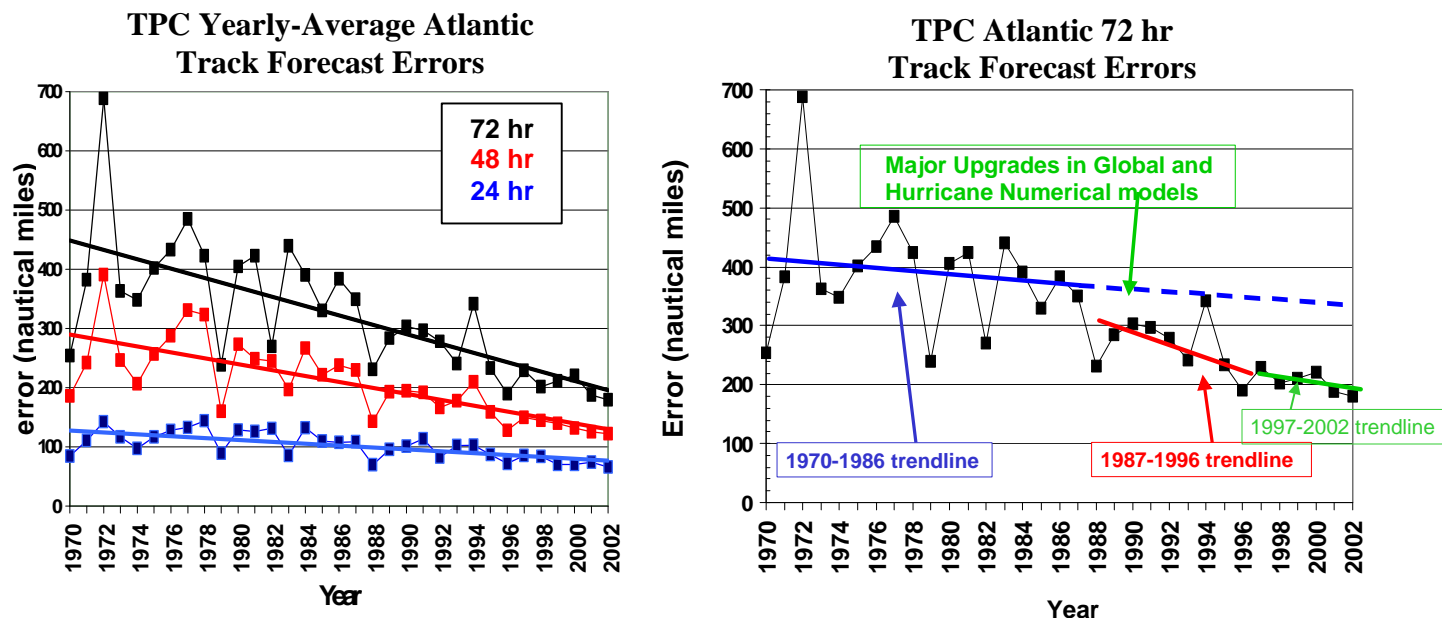
Annual HPC Threat Scores: 1.00 Inch Day 1 / Day 2 / Day 3



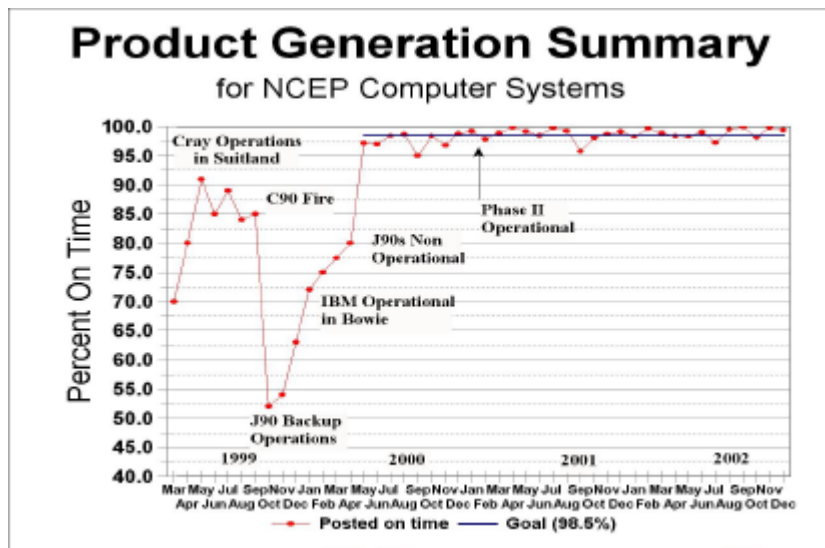
Climate Prediction Center Predicted Onset of El Nino with Eight-Month Lead Time. In February 2002, the Climate Prediction Center released its monthly “El Nino/Southern Oscillation Diagnostic Discussion”, discussing the potential for an El Nino event and predicting that a “weak to moderate” El Nino could develop by Summer. A moderate El Nino did develop by July 2002, peaked by December, and is now slowly weakening, as illustrated by the ensemble climate model forecasts.



Tropical Prediction Center Set New Annual Records for 36, 48 and 72-Hour Track Predictions of Atlantic Hurricanes and Tropical Storms for Second Year in a Row. These records extend back to the 1960's. Hurricane track forecasts were more accurate than (i.e., improved upon) every individual numerical model available to the forecasters at every forecast period (12-72 hours) in both the Atlantic and eastern North Pacific basins in 2002 based on annual averages. These official forecasts also improved upon output from the Global Forecast System ensemble-mean for these periods in both basins. The acceleration in forecast improvements in the mid-1980's and subsequent improvements through 2002 are related to improved observations, global model systems, and mesoscale numerical prediction models developed at GFDL and NCEP's Environmental Modeling Center. The net result is approximately a 130 nautical mile improvement in forecast track. The Tropical Prediction Center web page received over 488 million hits from August through October where activity during Hurricane Lili nearly doubled the previous record from Hurricane Floyd in 1999.



NCEP's Central Operations Obtained Record On-Time Product Generation. Customers and partners rely on the timely issuance of products and services. During 10 of the 12 months in 2002, NCEP met or exceeded its on-time delivery of 98.5 percent and established a record value of 99.1 percent in September.

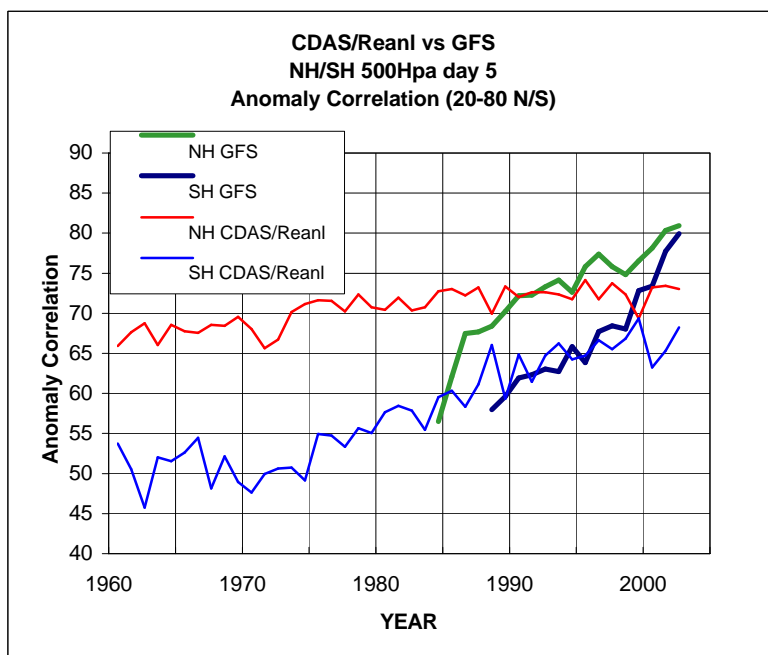


NUMERICAL WEATHER PREDICTION ADVANCES

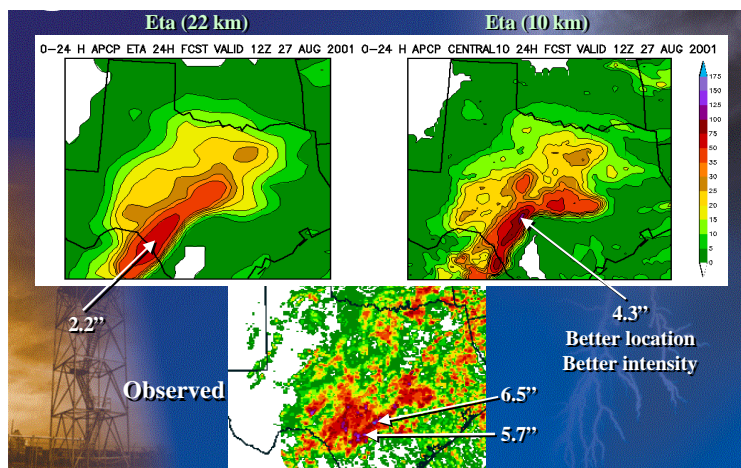
Improving weather, water, and climate forecasts are dependent upon advances made in numerical weather prediction, including improvements in the numerical models, data assimilation, and quality of the input data. During 2002 the following model improvements were implemented:

Global Forecast Model Skill Improved to Record Levels.

The benchmark 5-day global forecast skill score (500 mb geopotential height anomaly correlation) improved to record levels in both the Northern and Southern hemispheres. The anomaly correlation measures the ability of a numerical forecast to represent the general weather patterns of high-pressure ridges and low-pressure troughs, and the locations and strengths of fronts and major storms. The score has a maximum value of 1.0 (corresponding to a perfect depiction of the location of all major weather for all systems). The international modeling community considers a score above 0.6 useful skill. The major improvement in the last year caps a four-year trend of rapid improvements in the Global Forecast System. Perhaps the most remarkable aspect of the improvements is that the 2002 Southern Hemisphere score of .78 is nearly equal to the .79 Northern Hemisphere score, a factor that is directly attributed to the successful utilization of a large suite of satellite data assimilated into the NCEP Global Forecast System.



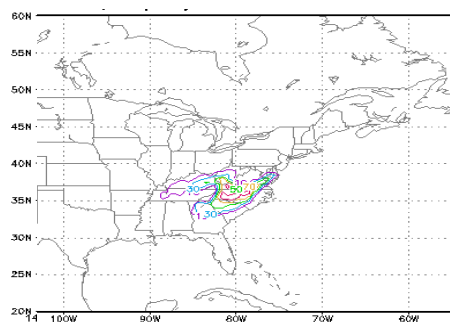
ETA: Improvements to the ETA model included an increase in resolution from 22 km/50 levels to 12 km/60 levels, modifications to the 3-dimensional variational (3DVAR) analysis to allow for increased use of NOAA-16 radiances and AMSU-B moisture channels from NOAA-15 and NOAA-16, a new grid-scale cloud microphysics scheme, and revamping the scheme which assimilates hourly analyses of observed precipitation. This upgrade will provide higher resolution guidance for threatening local weather phenomena and the possibility of more focused support for, e.g., fire weather and Federal Emergency Management Agency (FEMA) activities. Model forecasts of surface winds and temperatures will be improved, especially when influenced by complex terrain or coastlines (e.g., valley drainage and sea-breezes). Also expected are more accurate forecasts of the evolution and intensity of threatening local weather phenomena such as mountain-induced rains, heavy winter snows, lake effect snows, rain-snow line and dry line locations and local freezing temperature events.



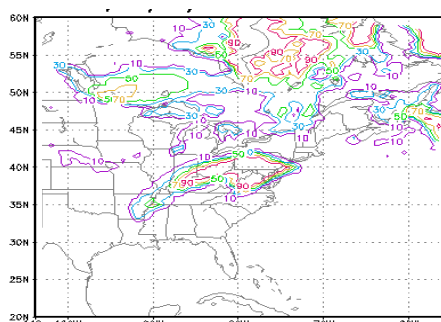
Global Forecast System: The Global Forecast System (GFS), a merged version of the Medium Range Forecast (MRF) model and the Aviation (AVN) model, became operational in 2002. It provides global numerical weather forecasts four times per day out to 16 days. The horizontal resolution was increased from 75 km to 55 km and the vertical resolution was increased from 42 to 64 levels for the first 84 hours of its forecast. This increase provides improved forecasts of large-scale circulation and precipitation produced from mountainous terrain and improves the resolution of sharp gradients such as near fronts and jet streams. Modifications were also introduced to the analysis to allow additional satellite data to be utilized. The increased use of satellite data included AMSU/A channels 12 and 13, NOAA-16 HIRS, NOAA-14, -15, -16, and microwave channels with surface signals (over land). The assimilation of NOAA-16 HIRS data accounted for 12.5% of the 22.7% increase in satellite data usage.

Ensemble Forecast System: Ensemble Forecast Systems provide information that conveys the level of uncertainty for a weather situation by producing model runs from a number of initial conditions. NCEP runs two ensemble systems twice daily. The global, or medium-range, ensemble has 11 members with a horizontal resolution of T126 (~105 km) to 84 hrs and T62 (~210 km) to 384 hrs and 28 vertical levels. The regional, or short-range, ensemble has 10 members and a horizontal resolution of 48 km with 45 levels out to 63 hrs. From the spread of ensemble forecasts, the reliability of the predictions can be assessed and any forecast quantity can be expressed in terms of probabilities. The Short-Range Ensemble Forecast System has played a key role in the collaborative Winter Weather Experiment, designed to improve winter storm watches and warnings.

COM Prob of Freezing Rain 15H fcst from 21Z 04 DEC 2002
verified time: 12z, 12/05/2002



COM Prob of Snow 15H fcst from 21Z 04 DEC 2002
verified time: 12z, 12/05/2002

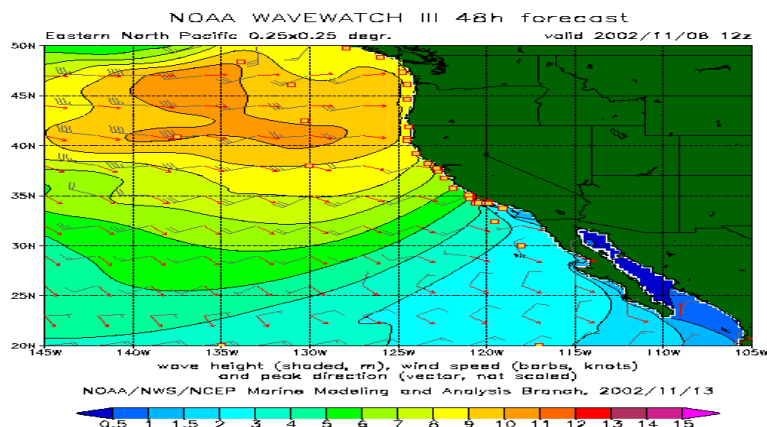


Climate Forecast System: The first component of a new operational seasonal climate forecast suite was implemented. The implementation included a 200 km resolution climate atmospheric general circulation model and associated software and data sets for producing ensemble multi-seasonal climate forecasts to support Climate Prediction Center operational seasonal climate outlook products. The multi-seasonal climate forecasts will have a one-month forecast cycle. Additional components of the climate forecast suite will include an ocean data assimilation system and a coupled ocean-atmosphere model. An example of the sea surface temperatures forecasts made by this model and used in the current El Nino episode is shown on page 5.

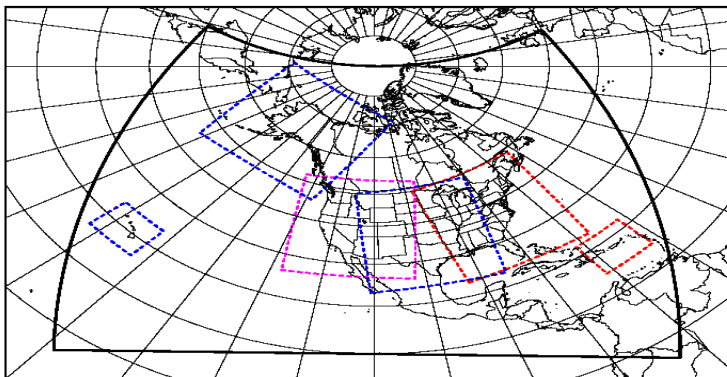
Coastal Ocean Forecast System: NCEP implemented its first-ever operational Coastal Ocean Forecast System for the East Coast of the U.S. This model is expected to improve forecasts of sea surface temperature, currents, and salinity, which are all critical in improving marine forecasts and warnings. The model assimilates sea surface temperatures from satellites, ships, fixed and drifting buoys, as well as sea surface topography anomalies provided by the TOPEX satellite. The Coastal Ocean Forecast System began as a collaborative effort between NCEP's Environmental Modeling Center, the National Ocean Service, and Princeton University and is the first 3-dimensional numerical ocean forecast system ever to be made operational by the civil sector in the U.S.

Rapid Update Cycle (RUC): Improvements were made to the Rapid Update Cycle, developed at the Forecast System Laboratory, including increasing the horizontal resolution from 40 to 20 km and increasing the vertical resolution from 40 to 50 levels. These enhancements are designed to bring improvements in aviation cloud-icing and visibility forecasts, as well as flight-level wind and temperature forecasts, keeping pilots abreast of hazardous weather conditions. Short-range forecasts are also being used by the Storm Prediction Center to help identify those areas where the potential for severe weather outbreaks are expected and appropriate watches become necessary.

Eastern North Pacific (ENP) Model: A high-resolution (0.25 degree latitude/longitude) wind/wave forecast model for the Eastern North Pacific was implemented in 2002. Based on the Wave Watch III Model, which provides boundary conditions, the new model runs twice per day producing forecasts out to 126 hours. The ENP model will provide improved forecast guidance for the Hawaiian Islands and the coastal areas of the western U.S.



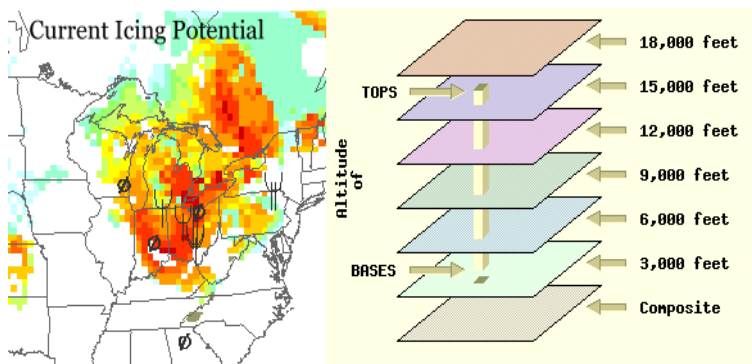
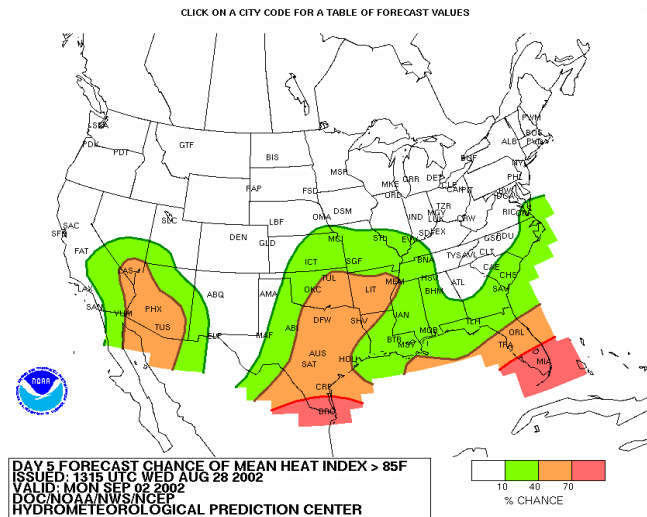
HiResWindow: Upgrades to the HiResWindow runs involved an increase to the model resolution from 10 km to 8 km for the Eastern, Central, and Western portions of the U.S., Hawaii, and Puerto Rico nested runs. The resolution of the Alaskan nest increased from 12 km to 10 km. In addition to the upgrades, the hydrostatic Meso Eta Model was replaced with the Nonhydrostatic Meso Model (NMM), which is the first nonhydrostatic model to run routinely at NCEP. Output from a 4 km version of the NMM is used to run ARL's HYSPLIT dispersion model.



NEW PRODUCTS AND SERVICES

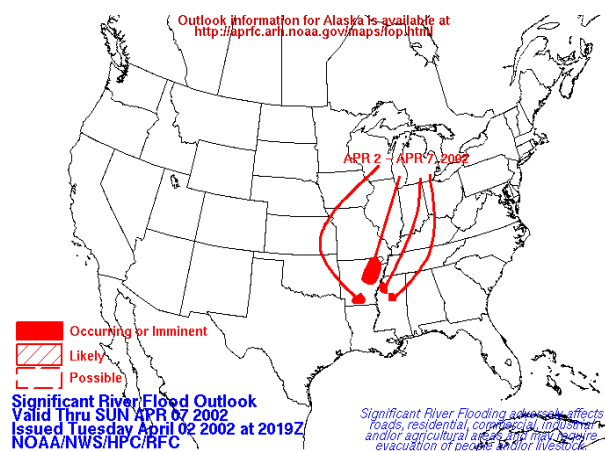
To meet an ever-increasing demand in product and service development and delivery, the following new products were implemented in 2002:

Mean Heat Index: The Mean Heat Index, a probabilistic 3-7 day forecast of potential heat waves for 90 U.S. cities, was introduced by the Hydrometeorological Prediction Center on May 1, 2002. The forecasts are produced daily from May 1 through September 30 and provide probabilistic charts showing the likelihood of exceeding average heat index temperatures of certain thresholds as guidance for NOAA's NWS field offices to use in issuing their heat stress related products.



Current Icing Potential: The Aviation Weather Center began the routine production of a new icing product, the Current Icing Potential. This automated product, developed by the Forecast System Laboratory, will enable commercial and private pilots to identify areas of major icing.

Day 3 Convective Outlook: The Storm Prediction Center expanded its convective outlooks to Day 3 beginning November 8, 2001. These outlooks outline areas where severe thunderstorms may develop during the next 6 to 72 hours and gives the individual probabilities of tornadoes, large hail, and damaging winds within 25 miles of any point.



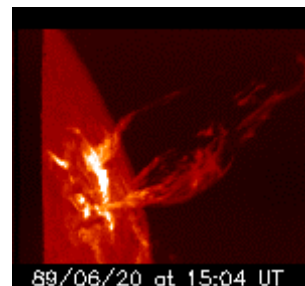
Significant River Flood Outlook: The Significant River Flood Outlook provides insight for the potential of river floods. It is issued once per day and provides guidance out to five days. Significant river flooding adversely affects roads, residential, commercial, industrial and/or agricultural areas and may require evacuation of people and/or livestock.

Expanded Marine/Ocean Product Suite: The Ocean Prediction Center has enhanced their product suite by extending Atlantic and Pacific Offshore Forecast narratives from three to five days; extending Atlantic and Pacific High Seas Forecasts from 36 to 48 hours; and expanding the 24-hour Forecast Surface Chart for the Pacific to include the offshore waters of Alaska.

Experimental 4 and 5-Day Tropical Cyclone Forecasts: The Tropical Prediction Center completed its second year of in-house, experimental 4- and 5-day tropical cyclone forecasts. Over the two-year period, forecasters achieved average hurricane track errors for the Atlantic Basin of 259 nm for Day 4 forecasts and 329 nm for Day 5 forecasts. This can be compared to errors from the CLIPER climatology/persistence baseline model of 559 nm and 750 nm for Day 4 and Day 5 over the same time period. NCEP is now working with NWS Headquarters to introduce operational Day 4 and 5 hurricane forecasts for the 2003 Hurricane Season.

Surface Analyses Charts: The Hydrometeorological Prediction Center has expanded its production of the Surface Analyses Charts from 6 to 8 per day and now provides a continuous complement of surface analyses around the clock every three hours for major weather features, as well as mean sea level pressure. Also, the three NCEP Service Centers preparing surface analyses, the HPC, OPC, and TPC, installed upgraded software to enhance their ability to automatically append the analyses from the other centers into its own analysis. This allows each center to focus on its own area and append analyses from other centers to fill out their analysis domain. This process results in less duplication of effort among the centers and a consistent set of surface analyses from NCEP.

New Space Weather Alerts: The Space Environment Center implemented a new system for delivering event-driven space weather information. The new messages, which include space weather Watches, Warnings, Alerts, and Summaries, are now issued in a revised format more readable to the space weather community. More messages will now be issued in near-real time on a wider variety of delivery systems, and are accompanied by an improved online support system available on the Space Environment Centers Alerts website (<http://www.sec.noaa.gov/alerts/index.html>).



COLLABORATIVE EFFORTS

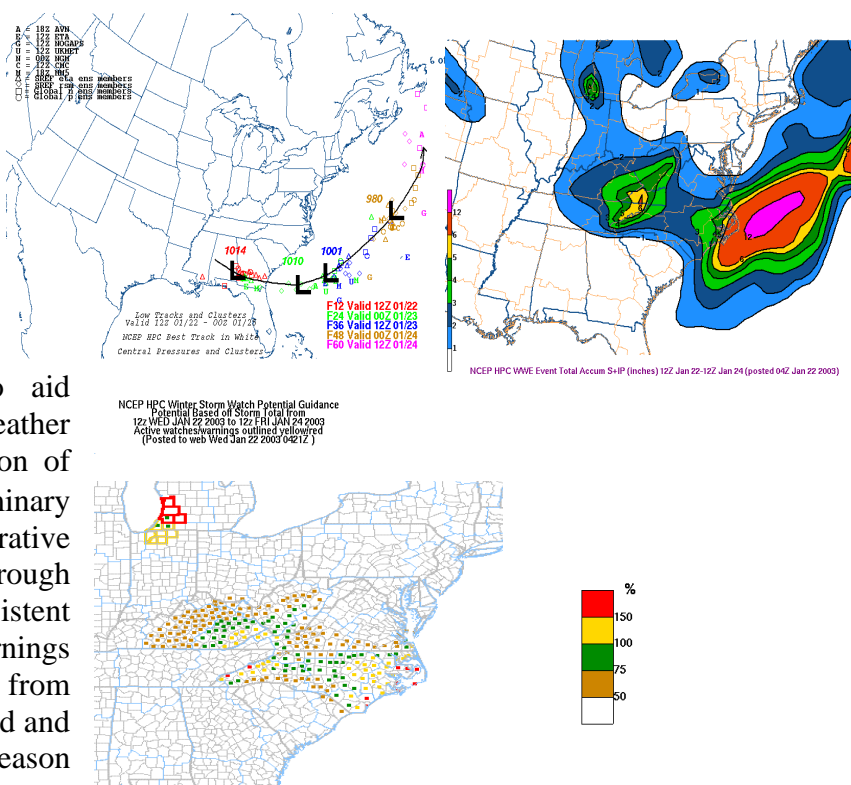
NCEP continued to strengthen its collaboration efforts with partners in the development of new products and services. Key activities during 2002 include:

Joint Center for Satellite Data Assimilation (JCSDA): During the past 3 years, the amount of satellite data available for operational numerical prediction models has increased dramatically from less than one million observations per day to greater than 100 million observations per day, and now represents over 97% of all data used in the operational numerical weather prediction model system. Current projections to 2010 indicate that up to a thousand times more satellite data will be available for use by the NCEP modeling suite. To accelerate the use of research and operational satellite data in operational numerical prediction models, NOAA, NASA and the Department of Defense established the JCSDA. During 2002, data from several research satellites were assessed and introduced into NCEP's operational models, including microwave imager precipitation estimates from SSM/I and TRMM, cloud liquid water amounts from SSM/I and AMSU, IR radiances from GOES-10 and surface winds from QuikSCAT. An upgrade to satellite processing involving increasing the sophistication of the thinning algorithm was introduced in to allow nearly all satellite data of meteorological value to be processed within NCEP's operational model system. At the same time, the top level of NCEP's global model was raised to 0.2 mb

allowing an additional stratospheric channel to be used in the model. Addition of the JCSDA Community Surface Emissivity Model, developed by NESDIS, enabled use of satellite microwave radiance data over some land areas. These activities represent NOAA's commitment to increasing the use of satellite data for numerical weather prediction. These data are part of the reason the Global Forecast System skill has improved to record levels.

Weather Research and Forecast (WRF) Modeling System: The WRF modeling system development project is a multi-year project being undertaken by several agencies, including NOAA/NCEP, NOAA/FSL, AFWA, NCAR, and NSF. This system is used to develop an advanced mesoscale forecast and assimilation system and to promote closer ties between research and operational communities. During 2002 at NCEP, the WRF common modeling infrastructure was incorporated into the non-hydrostatic Mesoscale HiRes Window Model. Operational implementation of the WRF will evolve during the FY 2004 – 2007 period and the WRF will replace all mesoscale operational model systems at NCEP by 2007.

Winter Weather Experiment: The Winter Weather Experiment is a collaborative effort between NCEP's Hydrometeorological Prediction Center and 31 Weather Forecast Offices in the Eastern and Central Regions. The objective of the experiment is to improve winter weather services to the public through the application of short-range ensemble forecasts to aid collaboration of the winter weather watches/warnings with the production of National guidance products. Preliminary results indicate that the collaborative process has had a positive impact through improved guidance, and more consistent and accurate watches and warnings delivered to the public. Final results from this year's experiment will be assessed and plans will be made for next winter season by mid-summer.



Collaborative Convective Forecast Product (CCFP): The CCFP represents a collaborative forecast effort amongst meteorologists from the Aviation Weather Center, commercial airlines, and Center Weather Service Units throughout the U.S. This effort is designed to produce better forecasts reduce aviation delays, and reroutes and cancellations related to convective events. CCFP consists of 2, 4 and 6 hr forecasts of thunderstorm coverage with indications of growth potential and probability of occurrence. During its third season in 2002, each of which lasts from March 1 to September 30, CCFP increased the frequency of issuances from every four hours to every two hours. CCFP has been a 24 x 7 operation since June of 2001.

Fire Weather Chat Room: The Storm Prediction Center continued using the fire weather chat room to collaborate with selected WFOs on the Day 1 and Day 2 national fire weather outlooks. This collaboration occurred during the critical fire weather season, which runs from around the first of May

to the end of September. During its second season, the chat room was expanded from 8 to roughly 32 Weather Forecast Offices from the four CONUS NWS regions and involved up to a ½ hour daily discussion on the national fire weather threats. These outlooks included critical areas for abnormally dry regions where strong winds and very low relative humidities resulted in extreme fire conditions. Areas of dry thunderstorms were also included. The collaboration resulted in better consistency between the national fire weather outlooks and locally issued fire weather forecasts by the WFOs. The SPC plans to work with the Regions this spring to expand the chat room to all CONUS WFOs by using the national AWIPS National Digital Forecast Database chat capabilities.

Collaborative Spring Program: The Storm Prediction Center, in collaboration with NOAA's Forecast System Laboratory, National Severe Storms Laboratory and Environmental Modeling Center, the Norman, OK Weather Forecast Office and Iowa State University, conducted the Collaborative Spring Program. The experiment focused on ways to forecast the time and location of storm initiative using ensemble forecast techniques with the goal to increase convective watch lead-time. As part of this experiment, the Storm Prediction Center provided support to the National Science Foundation-funded International H₂O Project.

U.S. Weather Research Program: NCEP continued to support the U. S. Weather Research Program through a variety of activities including the Joint Hurricane Testbed (JHT) located at the Tropical Prediction Center. In cooperation with NASA and the U.S. Navy, NCEP created the JHT to facilitate the rapid and smooth transfer of new technology, research results, and observational advances of the USWRP, to improve tropical cyclone analysis and prediction at operational centers. In addition, NCEP's Storm Prediction Center participated in the International H₂O Project, a field experiment designed to improve short-term severe weather forecasts and warnings.

North American Drought Monitor: In 1999, U.S. agencies collaborated to develop the U.S. Drought Monitor, a product that assesses current U.S. drought conditions. Building on this success, representatives from meteorological, hydrological, climatological, and agricultural agencies from the U.S., Mexico, and Canada joined efforts to develop a North American Drought Monitor. During 2002, an international peer review was conducted to assess the prototype map display and text formats. Upon approval from the international community, the North American Drought Monitor will become operational and introduced to the public during 2003.

North American Monsoon Experiment: The Climate Prediction Center led an international team of scientists from the U.S., Mexico, and Central America in developing plans for an upcoming North American Monsoon Experiment (NAME). This study will be aimed at determining the limits of predictability of warm season precipitation over North America with emphasis on time scales ranging from seasonal-to-interannual. The principal objectives of NAME are 1) a better understanding of the key components of the North American monsoon system and its variability, 2) a better understanding of the role of this system in the global water cycle, 3) improved observational data sets and 4) improved simulation and monthly-to-seasonal prediction of the monsoon and regional water resources.

International Coordination of Significant Weather Forecasts: The Aviation Weather Center has expanded the 6-hourly collaboration of the World Area Forecast System significant weather forecasts (SIGWX) to include the Australian Bureau of Meteorology and New Zealand Met Service. Specifically designed for collaboration, the Center operates a website that contains a display of the new SIGWX forecast for the tropical and southern Pacific Ocean area, and a chat room for comments and suggestions related to any of the forecast significant weather elements. This method has been shown to be successful over the North Pacific with participants from Guam, Hawaii, Alaska, and British Columbia.

The Hemispheric Observing System Research and predictability experiment (THORpex): THORPex is an international research program designed to improve forecasts of high impact, severe local storms. New observing techniques and technologies, as well as, new data assimilation and modeling strategies and techniques will be examined. The experiment's extent will be global and is expected to last one year from 2009-2010. Results from this experiment are expected to double the rate of improvement in weather forecasts and warnings and extend the current seven-day forecasts out to two weeks. The THORPex science plan will be finalized in 2003.

GOES Solar X-Ray Imager (SXI): The SXI images the Sun in X-rays, once per minute, around the clock. The first SXI, flying on GOES-12, was funded by the U. S. Air Force, built by NASA Marshall Space Flight Center, and operated by NOAA. Launched and tested in 2001, this instrument provides better detection and location of solar events and phenomena that affect Earth's space environment. When this unique instrument goes operational in April 2003, it will provide an unprecedented look at the solar corona by continuously supplying high-cadence, multi-band, full-disk solar X-ray images in near real-time to space weather forecasters, researchers, and the general public. The program is producing additional SXIs for the GOES-N, O, P spacecrafts. And, planning is underway for the Solar X-ray Imagers of the GOES R spacecraft series.

INFRASTRUCTURE

NOAA Center for Weather and Climate Prediction: The FY 2004 President's Budget contains funding to begin the construction of the new NOAA Center for Weather and Climate Prediction in suburban Maryland. The new center will be a state-of-the-art facility which will deliver national and global weather, water, and climate guidance, forecasts, warnings and analyses to its partners and the user community; accelerate the use of existing and new satellite data in numerical weather prediction models and forecast operations; improve air quality forecasts and enhance dispersion modeling and predicting volcanic ash distribution for aviation forecasts. It will house five of NCEP's nine centers, two divisions of NESDIS and OAR's Air Resources Laboratory. If approved by Congress, the new NOAA Center for Weather and Climate Prediction will be completed in 2008.

New Weather and Climate Supercomputer: The new weather and climate supercomputer, housed at IBM's Gaithersburg, MD facility was installed in 2002. The new high-performance computing system uses highly parallel computer architecture with 1,408 processors. The performance will allow NCEP to operate more sophisticated models of the atmosphere and oceans to improve weather, water, and climate forecasts. Over the life of the complete contract, the computer will undergo incremental upgrades reaching no less than 48 times the computational power of the current IBM SP by late 2009. Currently, the supercomputer is the second most powerful *weather* supercomputer system in the world, receives over one hundred million observations daily, produces 320 gigabytes of information daily, and produces over 5 million products each day. The computer will be integrated into routine operations in the Spring of 2003.



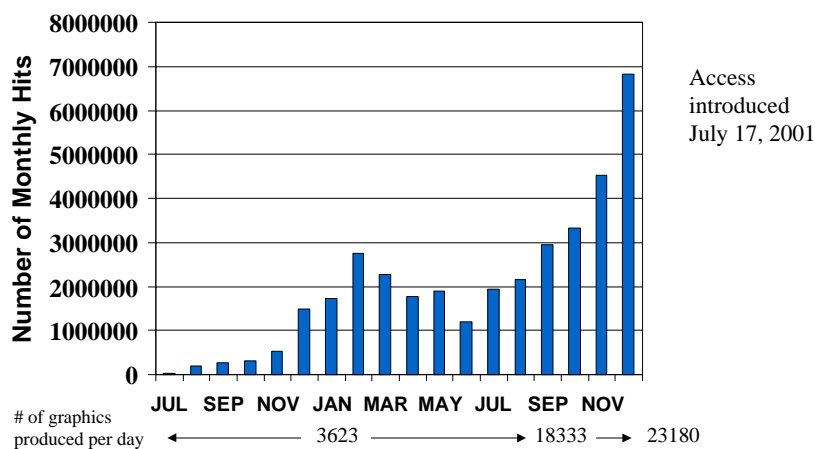


New Facility for Storm Prediction Center: Groundbreaking for the National Weather Center Building in Norman, OK was held during November 2002 on the University of Oklahoma (OU) South Campus. This building will house NCEP's Storm Prediction Center, NOAA's National Severe Storms Laboratory, Warning Decision Training Branch, the Norman NWS Forecast Office and parts of NOAA's Radar Operations Center. It will also house meteorological components of the University of Oklahoma. Construction is expected to begin next summer with a scheduled completion date in December 2005.

OUTREACH EFFORTS

NCEP's success is dependent on an active outreach and education program. Outreach efforts are essential in order to increase awareness and understanding of how NCEP's forecasts are made, what value they provide to users and why NCEP is where climate and weather services begin.

Popularity of NCEP Models Web Page



NCEP Models Web Page Has Over 6.8 Million Hits Per Month: During 2002, NCEP provided several improvements to its Model Web Page including better reliability and new graphics displays, GFS output to 16 days, and Wave Watch III model output. NCEP now produces 23,180 products per day for this web access, with over 6.8 million hits per month (six-fold increase from last year). To view this popular page see: <http://www.nco.ncep.noaa.gov/pmb/nwprod/analysis/>

Student Programs: NCEP continued to ensure the inflow of new talent into the organization by enlarging and strengthening educational relationships. During 2002, NCEP hired 22 students through NOAA student programs. In addition, NCEP expanded its relationship with Minority Serving Institutes to include Howard University, Clark Atlanta University, and University of Puerto Rico at Mayaguez.

International Desks: NCEP provided training to over 20 meteorologists at its International Desks. Forecasters from South America, Saudi Arabia, Africa, and the Caribbean were trained on the usage of meteorological and technological equipment and with numerical weather prediction products. The products prepared by the International Desks are then sent back to their respective countries to be used.

Forecaster Exchange Program: The Storm Prediction Center has been participating in a forecaster exchange program for the past four years with the Environment Canada's Prairie Storm Prediction Center in Winnipeg. These forecaster exchanges foster the sharing of new ideas, techniques and

concepts between the two organizations. This year the program expanded to include an exchange with Environment Canada's Toronto Office.

27th Climate Diagnostics and Prediction Workshop: Approximately 100 national and international scientists attended the 27th Annual Climate Diagnostics and Prediction Workshop hosted by the Climate Prediction Center. The workshop provided an opportunity for participants to exchange information, ideas, and opinions on the latest developments in climate monitoring, modeling and prediction.



Severe Weather Workshop Conference: The Storm Prediction Center hosted the 2002 National Severe Weather Workshop, along with NOAA Weather Partners in Norman, Oklahoma, NWS HQ, NWS Central Region HQ, the Central Oklahoma Chapters of the AMS, the National Weather Association, and the Oklahoma Emergency Management Association. The workshop focused on enhancing a partnership between the Emergency Managers, the media, NOAA and the NWS, and focusing on Working Together to Save Lives. Overall, approximately 380 people attended the workshop from 29 States.

Hurricane Awareness Tours: To educate the public on hurricane awareness, the Tropical Prediction Center participated in two Hurricane Awareness Tours in 2002 – one in the Caribbean and Central American countries and the other in the U. S. Gulf of Mexico area. Several themes were focused on including: sharing observations, “speaking with one voice” during hurricane events, and the “team effort” approach between meteorologists, emergency managers, local officials and the media. Over 7000 people viewed the U.S. Air Force (Reserve), WC-130 "Hurricane Hunter" aircraft used to transport the official group. Both host country and TPC staff provided numerous print and electronic media interviews in English and Spanish. Hurricane awareness and preparedness presentations were given in Mexico, Honduras, and Dominican Republic, as well as Belize and Puerto Rico. In addition, the Tropical Prediction Center took part in the Gulf Coast Hurricane Awareness Tour to inform residents of the threats associated with hurricanes.

AWARDS

The following lists notable awards and distinctions received by NCEP employees during the past several years:

2000

James Franklin – Tropical Prediction Center – National Isaac Cline Award for Meteorology

Norman Junker – National Weather Association Larry Johnson Award

Hydrometeorological Prediction Center - DOC Gold Medal – Exemplary services that saved lives during Hurricane Floyd

Jim Hoke and Dave Feit - DOC Silver Medal - Exceptional public service in providing extremely accurate oceanographic and atmospheric forecasts in support of the NOAA response to the crash of EgyptAir Flight 990

Wayne Higgins –NOAA Bronze Medal - Pioneering research linking extreme weather events, climate variability, and long term trends to substantially improve climate products and services

Kenneth Mitchell – NOAA Bronze medal - Improving NWS numerical forecasts of max/min temperatures with geostationary satellite imagery and sophisticated computer models incorporating land surface physics

Climate Prediction Center – NOAA Bronze Medal - Improvements in coordination of the first seasonal drought outlook

Climate Prediction Center/Tropical Prediction Center/OAR – NOAA Bronze Medal - Issuing accurate and first official physically-based Atlantic Seasonal Hurricane Outlooks for the 1998/1999 seasons, based upon new research.

NCEP Central Operations - NOAA Bronze Medal – Exemplary services provided to sustain the critical forecasts systems during a period of uncontrolled disasters

NCEP Central Operations - NOAA Bronze Medal - Demonstrating extraordinary performance and dedication by exceeding expectations in providing software tools to NCEP Service Centers

Ocean Prediction Center - NOAA Bronze Medal - Exceptional service provided during recovery efforts following the Egypt Air Flight 990 crash

Aviation Weather Center - NOAA Bronze Medal - Customer service and economic efficiency improvement with establishing Collaborative Convective Forecast Product (CCFP)

Space Environment Center – DOC Gold Medal - Designing, developing, and implementing the Advanced Composition Explorer Real-Time Solar Wind System

Space Environment Center – DOC Silver Medal – Improving services through the creation and use of easily understandable NOAA Space Weather Scales describing the severity, rarity, and consequences of space weather storms

2001

Edward Rappaport – Tropical Prediction Center – National Isaac Cline Award for Leadership

Louis Uccellini - Director, NCEP - Presidential Rank Award

Robert Johns – Storm Prediction Center – National Weather Association ‘s T. Theodore Fujita Research Achievement Award

Eric Holweg – Tropical Prediction Center - NOAA Bronze Medal - Writing the “Mariners Guide for Hurricane Awareness in the North Atlantic Basin” using numerical models

Storm Prediction Center (along with the Birmingham WFO) - DOC Silver Medal – Exemplary performance during the December 2000 tornado outbreak in Alabama.

Fred Mosher – Aviation Weather Center – DOC Silver Medal - Member of the Radar Web Design Team

Tropical Prediction Center - NOAA Bronze Medal (Salim Leyva, Vivian Jorge, Frank Lepore, Edward Rappaport and David Caldwell) - Implementing the media facility at TPC

Hydrometeorological Prediction Center - NOAA Bronze Medal - Contributions that improve forecasts to the American people while under strict time constraints and with no additional resources

Steve Flood and Mike Schichtel – Hydrometeorological Prediction Center - NOAA Bronze Medal - Developing teletraining course on medium-range weather forecasting

Peter Manousos -Hydrometeorological Prediction Center - NOAA Bronze Medal – Educating weather forecasters in the use and interpretation of NWS weather prediction models thus improving short-term forecasts to the public

Dave Reynolds – Hydrometeorological Prediction Center - NOAA Bronze Award - Revising the NWS process for issuing quantitative precipitation forecasts for use in river models run by the River Forecast Centers

Song Yang – Climate Prediction Center - American Meteorological Society Editor's Award

2002

James Hoke – Hydrometeorological Prediction Center - Presidential Rank Award

Steve Lord – Environmental Modeling Center - Special Act Award - NASA Joint Center for Satellite Data Assimilation...NASA award

Keith Brill – Hydrometeorological Prediction Center – National Isaac Cline Award for Meteorology

Environmental Modeling Center – DOC Silver Medal Award for Scientific/Engineering Achievement - Developing state-of-the science numerical forecast systems resulting in improved NWS forecasts

Michael Crumly – Space Environment Center – NOAA Spectrum Award for Managers living the vision

Howard Singer – Space Environment Center – UCLA Slichter Lecturer Award

2003

Joseph Schaefer – Storm Prediction Center - AMS Francis Reichelderfer Award

National Centers for Environmental Prediction

*Aviation Weather Center
Climate Prediction Center
Central Operations
Environmental Prediction Center
Hydrometeorological Prediction Center
Ocean Prediction Center
Space Environment Center
Storm Prediction Center
Tropical Prediction Center*

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